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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/612,136	07/07/2000	Tohru Nagano	JA999-118X	8446

7590 09/26/2007  
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EXAMINER
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HAN, QI

ART UNIT	PAPER NUMBER
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2626

MAIL DATE	DELIVERY MODE
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09/26/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 09/612,136	Applicant(s) NAGANO ET AL.	
	Examiner Qi Han	Art Unit 2626	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 February 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 7-14, 16-26, 29 and 30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 7-14, 16-26, 29 and 30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

#### ***Response to Amendment***

2. This communication is responsive to the applicant's amendment dated 02/12/2007. The applicant(s) amended claims 7, 16-21 and 29-30, and cancelled 15 (see the amendment: pages 2-8).

The examiner withdraws the disclosure objection, because the applicant amended the specification.

The examiner withdraws the claim objection, because the applicant amended the claim.

The examiner withdraws the claim rejection under 35 USC 112 1<sup>st</sup> and 2<sup>nd</sup>, because the applicant amended/cancelled the corresponding claim(s).

#### ***Response to Arguments***

3. Applicant's arguments filed on 02/12/2007 with respect to the claim rejection under 35 USC 102/103, have been fully considered but are moot in view of the new ground(s) of rejection, since the amended claims introduce new issue and/or change the scope of the claims. It is noted that the previous cited references are still applicable to the newly amended claims for the prior art rejection (see below).

In response to applicant's arguments based on amended claims 7 and 21 that the limitation “mutually dependent relationships” with its “extraction rule” is “neither taught nor suggested by the combination of Vaithyanathan in view of Liddy” (Remarks: page 10, paragraph 1), the examiner respectfully disagrees with the applicant and has a different view of the prior art teachings and the claim interpretations. It is noted that, based on broadest reasonable interpretation of the claim, Vaithyanathan’s disclosure of ‘using a K-means clustering algorithm (rule)’ and “nearest-neighbor rule” for documents extraction/categorization (col. 11, lines 32-39) can be read the claimed and argued limitation above. Further, Liddy discloses concept-based documents extraction and categorization, including matching by using frequency/co-occurrence of nouns (col. 6, lines 50-60), using concept database and hierarchical concept mapper (col. 7, lines, 34-45), and using ‘combined and normalized correlation between each concept assigned to the word with Unique concepts’ (Figs.3A-3B), which all suggest that the combined teachings satisfy the claimed limitations (also see detail in the claim rejection below).

In response to applicant's argument based on amended claims 29-30 that “the cited references do not teach or suggests extracting unique concepts based on a statistical characteristic at all” (Remarks: page 10, paragraph 2), the examiner respectfully disagrees with the applicant simply because the argument is not true and applicant totally ignored the examiner’s recitations in the previous office action (for claim 1). It is clear that “frequency/co-occurrence of proper nouns” and certain “probabilities” for the extraction or categorization disclosed by Liddy are definitely statistical characteristics (see detail in the previous office action section 9 and/or the corresponding claim rejection below).

For above reason, the applicant’s arguments are not persuasive.

*Claim Rejections - 35 USC § 103*

4. Claims 7-14, 16-16 and 29-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vaithyanathan et al. (US 5,857,179) hereinafter referenced as Vaithyanathan, in view of Liddy et al. (6,006,221) hereinafter referenced as Liddy.

As per **claim 7**, Vaithyanathan discloses computer method and apparatus for clustering documents and automatic generation of cluster keywords (title), including ‘information retrieval, data mining and information filtering’ (col. 2, lines 20-26), comprising:

“receiving the collection of data, the collection of data comprising key word” (Figs. 2, 5 and 6a, show the collected of document (received a collection of data); col. 10, lines 43-59, ‘the cluster summary data (also read on collection of data)’; col. 2, lines 40-42, ‘identified terms represent key-words of each of document’);

“converting the collection data into labeled data”; (Fig. 5 and col. 10, lines 43-59, ‘the cluster summary data may be presented ...to allow the user to select (corresponding to convert) the format (corresponding labeled data) of the returned data, or to select a particular number of keywords or documents in each cluster summary (also corresponding to labeled data)’; col. 5, lines 20-35, ‘standardized set of format rules’, wherein the standardizing processing can also be interpreted as converting);

“combining the labeled data into clauses of related data” (col. 5, lines 20-55, wherein the text after the ‘pre-processing’ is interpreted as combined “labeled data”; col. 10, lines 60-67 and figure 6a, ‘sentences 1-19 are analogous to document (the converted document combined with standardized text format) into clauses or in a database’, wherein the term “clauses” is broadly

Art Unit: 2626

interpreted as phrases, clauses or sentences, since the applicant does not follow the conventional meaning of a clause in the specification (see page 15) and does not specifically provide his own definition either);

“assigning a category to one or more key words from the labeled data” (Fig. 6a-6c and col. 11, lines 1-5, ‘each element (key word)’ in the sentences 1-19 is assigned a category and a matrix is formed);

“identifying mutually dependent relationships between or among the categorized key words, according to at least one rule defining mutually dependent relationships between categorized words”, (Fig. 6f and col. 11, lines 33-62, this matrix is then clustered into three clusters ‘using a k-means clustering algorithm’ based on the relationship between the words (key words) in the sentences, ‘using nearest-neighbor (interpreted as mutual dependent relationship) rule’, ‘using the rules of thumb described above’);

“grouping the identified mutually dependent relationships into groups of related mutually dependent relationships” (Fig. 6f and col. 11, lines 52-57, ‘Clusters (the groups) I though III’).

It is noted that Vaithyanathan does not **expressly** disclose “extracting unique concepts associated with the identified groups of related dependent relationship, wherein the step of extracting unique concepts comprises using a mutually dependent relationship extraction rule comprising a string of categories of arbitrary length to be extracted.” However, the feature is well known in the art as evidenced by Liddy who discloses multilingual document retrieval system and method using semantic vector matching (title), wherein ‘the term “document”... include ...one or more clauses, sentences, or paragraphs’ (col. 3, line 65 to col. 4, line 4), comprising ‘using the clustering algorithm (rule) ...or other algorithms (rules) ...mining large

Art Unit: 2626

data sets and extracting highly relevant document arranged as conceptually-related cluster...’ (col. 20, lines 57-61); ‘matching ... conceptual-level contents...and frequency/co-occurrence (read on either mutually dependent relationship or statistical characteristic) of proper nouns’ (col. 6, lines 50-53); ‘to select (extract) the single most appropriate concept group from the multilingual concept database for all those input words’ and ‘using three sources of linguistic evidence (also interpreted as mutually dependent relationships)’, including ‘a word in the sentence has been tagged (labeled and/or identified) ...with only one concept group code... considered Unique (unique concepts)’ and ‘and concept group codes ...more than a predetermined number (threshold) of words within the sentence being processed... considered Frequentcodes (related mutually dependent relationships)’, ‘these two types of locally determined concept group codes are used as “anchors” in the sentence’ (col. 11 line 39 to col. 12, line 7); ‘combined and normalized correlation (also interpreted as mutually dependent relationship) between each concept’ (Figs. 3A-3B); ‘the output ... is a tagged native language text stream with unique, monolingual, hierarchical concept categories assigned to each identified substantive word (interpreted as a string of categories of arbitrary length to be extracted)’ (col. 14, lines 28-31); ‘the sublanguage relies on items such as function words, meta-text phrases...to recognize and extract the formal logical combination of relevance requirements’(col. 17, lines 44-49) and ‘single concept code (unique concepts) is assigned to the word’; which suggest the system has capability of implementing the functionality as claimed. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Vaithyanathan by providing combined various correlations and matching conceptual-level contents such as co-occurrence between concepts (mutually dependent relationships), and

Art Unit: 2626

recognizing/extracting word with a concept group considered unique and/or assigning word a single concept code (unique concepts), as taught by Liddy, for the purpose (motivation) of disambiguating the related words (Liddy: col. 12, lines 6-7) and/or finding highly relevant documents for searching (Liddy: col. 3, lines 25-28).

As per **claim 8** (depending on claim 7), Vaithyanathan in view of Liddy discloses “the categorized words identified as being in a mutually dependent relationship exist within separate clauses” (Vaithyanathan: Fig. 6f, col. 11, lines 52-56; Liddy: col. 6, lines ‘matching ...the conceptual- level contents’, ‘matching occurs based on the frequency and co-occurrence (also interpreted as mutually dependent relationship) of proper nouns in documents and queries’);

As per **claim 9** (depending on claim 8), Vaithyanathan in view of Liddy discloses “the separate clauses exist within separate sentences” (Vaithyanathan: Fig. 6a, col. 11, lines 52-57; Liddy: ‘the document ...to include one or more clauses, sentences, or paragraphs (including separate clause)’).

As per **claim 10** (depending on claim 7), Vaithyanathan in view of Liddy discloses “the converting step comprises conversion of the received collection of data into the same format and wherein the received collection of data comprises various data formats” (Vaithyanathan: Fig. 5 and col. 5, line 18-35, his document collection and ‘... words following a standardized set of format rules (corresponding to same format)’; Liddy: col. 8, lines 48, ‘accepts raw, unformatted text and transfers this to a standard format (interpreted as same format)’).

As per **claim 11** (depending on claim 7), Vaithyanathan in view of Liddy discloses “the key words comprise a coherent character string within the clauses” (Vaithyanathan: Figs 5 and 6A;).



As per **claim 12** (depending on claim 7), Vaithyanathan in view of Liddy further discloses "...searching a category dictionary to identify a category which matches the key word" (Liddy: col. 11, lines 13-14, 'mapping (searching) each word to all possible corresponding concept categories using the multilingual concept database (MCD) (interpreted as category dictionary); col. 14, lines 3-67, 'monolingual hierarchical concept dictionary (MHCD)' and 'MCD both define concepts as a groups of synonyms').

As per **claim 13** (depending on claim 12), Vaithyanathan in view of Liddy further discloses "the category dictionary comprises combination of original expressions, parts of speech, concepts and categories, wherein the original expressions are equivalent to the key words, the parts of speech are a classification of the key words, the concept are replacement expressions of the key words and categories represent a larger group having the nature of the keyword" (Vaithyanathan: Figs. 6A and 6F and col. 5, lines 38-60; Liddy: col. 10, lines 53-67, 'MCGRE (multilingual concept group retrieval engine), accept... part-of-speech tagged, input text (original expression) and retrieves from the multilingual concept database any and all of the concept groups...'; col. 9, lines 7-50, 'Part of Speech (POS) tagger', 'identify various substantive words (key words)', 'concept-level categories'; col. 11, lines 18-33, 'each concept group is a collection of words or phrases (key words)... that are conceptually synonymous or near-synonymous (replacement expressions of the key words)'; col. 14, lines 3-67, 'monolingual hierarchical concept dictionary (MHCD)...define concepts as a groups of synonyms'; therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Vaithyanathan and Liddy these teachings to providing a database or dictionary having above mentioned elements, for the purpose of disambiguating the related words (Liddy:

Art Unit: 2626

col. 12, lines 6-7) and/or finding highly relevant documents for searching (Liddy: col. 3, lines 25-28)).

As per **claim 14** (depending on claim 7), Vaithyanathan in view of Liddy further discloses “the mutually dependent relationships are determined according to rules applied to key words and their associated categories within a clause” (Vaithyanathan: Figs. 6f and 6g and col. 11, line 32 to col. 12, line 7, ‘nearest-neighbor rule’, ‘using the rules of thumb described above’).

As per **claim 16** (depending on claim 7), Vaithyanathan in view of Liddy further discloses “the threshold is provided manually by a user for each of the identified groups of mutually dependent relationships in response to the user being presented a display of all the groups of mutually dependent relationships, at a GUI” (Liddy: Fig 2 and col. 8, lines 15-16 and col. 20, lines 16-40, ‘GUI 250’, ‘presenting the result to the user’, ‘allows users to interactive with the system ...’, which suggests that the system is capable of implementing the functionality as claimed).

As per **claim 17** (depending on claim 7), the limitation is interpreted as “presenting identifying the groups to user at a GUI”. The rejection is based on the same reason described for claim 16, because the rejection for claim 16 covers the same or similar limitation(s) of claim 17.

As per **claim 18** (depending on claim 7), the rejection is based on the same reason described for claim 16, because the rejection for claim 16 covers the same or similar limitation(s) of claim 18.

As per **claim 19** (depending on claim 7), the rejection is based on the same reason described for claim 7, because the rejection for claim 7 covers the same or similar limitation(s) of claim 19.

As per **claim 20** (depending on claim 7), the rejection is based on the same reason described for claim 16, because the rejection for claim 16 covers the same or similar limitation(s) of claim 20.

Claims **21-26** are the same in scope and content as claims 7-20 above and therefore are rejected under the same rationale.

As per **claims 29-30**, the rejection is based on the same reason described for claim 7, because the rejection for claim 7 covers the same or similar limitation(s) of claims 29 and 30, wherein ‘matching ... frequency/co-occurrence of proper nouns’ (Liddy: col. 6, lines 50-59) reads on claimed “statistical characteristic” and ‘any concept group codes ... more than a predetermined number’ (Liddy: col. 12, lines 1-3) reads on claimed “beyond a threshold with respect to the set to which it belongs”. In addition, Liddy further discloses ‘highest correlation value bigger than predetermined threshold’, ‘N-gram based probability (a statistical characteristic) of occurrence of each concept’ (Figs. 3A-3B); ‘the monolingual category correlation matrix is used to indicates the probabilities ... to which a multilingual concept group has been mapped correlate with the Unique or Frequent monolingual category determined by local context’ (col. 14, lines 50-55), which further supports the rejection by the combined references.

### ***Conclusion***

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A

Art Unit: 2626

shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Qi Han whose telephone numbers is (571) 272-7604. The examiner can normally be reached on Monday through Thursday from 9:00 a.m. to 7:30 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil, can be reached on (571) 272-7602.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Inquiries regarding the status of submissions relating to an application or questions on the Private PAIR system should be directed to the

Art Unit: 2626

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QH/qh

September 18, 2007



**RICHEMOND DORVIL**  
**SUPERVISORY PATENT EXAMINER**